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INVITED COMMENTARY

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Few patients with peripheral arterial disease have a disease-free coronary circulation.[1] Reconstructive procedures impose further stress on the diseased coronary circulation, and cardiac morbidity and mortality are recognized complications of vascular surgery. The article by Durazzo et al in this issue of The Journal makes the exciting suggestion that a short course of perioperative statins could minimize these complications.

Before we all rush into new statin protocols, it is prudent to examine the evidence carefully. One hundred patients, scheduled for elective vascular procedures, were randomized to receive either 20 mg of atorvastatin or placebo, and the trial was designed to show a reduction in postoperative cardiovascular events from 22% to 1% within 6 months. This was a challenging target to set, because even in patients at the highest cardiac risk undergoing vascular surgery under general anaesthesia the perioperative cardiovascular event rate is 34%.[3] In the trial by Durazzo et al, [2] patients in the placebo group underwent more procedures under spinal anaesthesia, 13 of 46 vs 5 of 44 in the atorvastatin group. Therefore the incidence of events in the placebo group (26%) was very high, unless spinal anesthesia was used, because these patients were more likely to have American Society of Anesthesiologists grade III and IV disease. In contrast, statin treatment reduced the incidence of cardiovascular events to 8%, a result that just achieved significance $P = .031$. The excess events in the placebo group were predominantly myocardial infarction and stroke. Survival analysis showed a more convincing benefit in favor of atorvastatin treatment. Confirmation of these results from other trials is awaited eagerly.

So there is cautious optimism for an effective, simple, safe, new treatment to minimize perioperative cardiac morbidity and mortality after vascular surgery. Further support for this optimism comes from retrospective analyses of in-hospital mortality after vascular surgery and from late mortality after successful aortic aneurysm repair.[4,5] Statin therapy was more common in patients discharged after vascular surgery than in those who died in hospital (25% vs 8%; $P < .001$).[4] Late cardiovascular deaths after aneurysm repair were reported in 9% of statin users compared with 38% in nonusers.[5] All of these studies reported that the benefit of statins is independent of the use of β-blockers.

How do statins produce these effects? Reduction of serum lipid concentrations is an unlikely explanation for immediate beneficial effects of statins on perioperative morbidity and mortality. Two studies started with the hypothesis that statins exert their beneficial perioperative effect by plaque stabilization.[2,4] Statin therapy also reduces postprocedural myocardial infarction and death after percutaneous coronary intervention.[6] In this context, analysis of the serum C-reactive protein concentration indicated that statins exert their effect by an anti-inflammatory mechanism, statin therapy having most marked benefit in patients with the highest preprocedural C-reactive protein concentrations.[6]

It is disappointing that only a minority of patients (15%) in the trial by Durazzo et al[2] continued to receive statin therapy after 45 days. Vascular surgeons must not ignore the mounting evidence that statins benefit the cardiovascular health and survival of all patients with peripheral arterial disease.[7]

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